

This reference manual was prepared for use with punched card deck 115, produced from observations taken at sea and entered on WB Form 1210A-Marine. Few ships of registry other than the U. S. are represented in this deck primarily because of the use of a standard form which was obtained only from USWB offices. The few that are not of U. S. registry are vessels that were engaged in Western Hemisphere trade exclusively and therefore, of Central and South American registry. The preponderance of observational material is in the North Atlantic for all years with lesser numbers of observations in the South Atlantic. In the Pacific Ocean it will be noted that there is a gradual decrease in data from the U. S. coast to the International Date Line and also toward the Equator. Observations outside the Western Hemisphere are few in number and do not represent all years although much of this data is in the normal steamer lanes. Estimates made prior to the writing of this reference manual indicate a total card volume of 946,000 observations in this deck.

Mention should be made of the fact that fixed weather ship observations from 1940 to 1945 are punched in this deck. Attempts have been made and are still being made to distinguish these observations from transient vessels.

Weather elements for all fields were punched when available. Blanks were used to indicate missing elements. Ship numbers if used, can be misleading as they usually represent the serial number of the barometer issued to a specific ship. The misrepresentation is introduced when the barometer was calibrated and re-issued, but not necessarily to the ship that originally used the instrument.

A salmon or green card, IBM electrotype #728519, was used for this deck.

[illegible]

CARD CONTENT					SOURCE CONTENT	
Col- umns	Item	Code	Code Definition	Remarks	Units or Symbols	Reporting and Coding Practices
1-2	Month	01-12	January - December			
3-4	Day	01-31	Day of Month			
5-6	Year	38-48	1938 - 1948			
7	Day of the Week	1	Sunday		Y	
		2	Monday			
		3	Tuesday			
		4	Wednesday			
		5	Thursday			
		6	Friday			
		7	Saturday			
8	Octant	0	0° to 90°W	Northern Hemisphere	Q	
		1	90° to 180°W			
		2	180° to 90°E			
		3	90° to 0°E			
		4	0° to 90°W	Southern Hemisphere		
		5	90° to 180°W			
		6	180° to 90°E			
		7	90° to 0°E			
9-11	Latitude	000-900	0.0° to 90.0°N	Column 8 punched 0-3.	LIL	
		000-900	0.0° to 90.0°S	Column 8 punched 5-8.		
12-14	Longitude	000-900	0.0° to 99.9°W	Column 8 punched 0, 1, 5, 6.	111	
		000-800	100.0° to 180.0°W	Column 8 punched 1 or 6		
		000-900	0.0° to 99.9°E	Column 8 punched 2, 3, 7, 8.		
		000-800	100.0° to 180.0°E	Column 8 punched 2 or 7.		
15-16	Hour	00-23	0000-2300 GMT		GG	Usually recorded every 3 or 6 hours.
17-18	Wind Direction	00	Calm		DD	
		02	North Northeast			
		04	Northeast			
		06	East Northeast			
		08	East			
		10	East Southeast			
		12	Southeast			
		14	South Southeast			
		16	South			
		18	South Southwest			
		20	Southwest			
		22	West Southwest			
		24	West			
		26	West Northwest			
		28	Northwest			
		30	North Northwest			
		32	North			
		Blank	Unknown			
19	Beaufort Wind Force	0	Calm	Wind speed < 1 knot.	F	
		1	Light airs	Wind speed 1-3 knots.		
		2	Light breeze	Wind speed 4-6 knots.		
		3	Gentle breeze	Wind speed 7-10 knots.		
		4	Moderate breeze	Wind speed 11-16 knots.		
		5	Fresh breeze	Wind speed 17-21 knots.		
		6	Strong breeze	Wind speed 22-27 knots.		
		7	High wind	Wind speed 28-33 knots.		
		8	Fresh gale	Wind speed 34-40 knots.		
		9	Strong gale	Wind speed 41-47 knots.		
		10	Whole gale	Punched as X over 0, 48-55 knots.		
		11	Storm	Punched as X over 1, 56-63 knots.		

REFERENCE MANUAL

115 U. S. MERCHANT MARINE 1938-48

CARD CONTENT					SOURCE CONTENT	
Col- umns	Item	Code	Code Definition	Remarks	Units or Symbols	Reporting and Coding Practices
19	Beaufort Wind Force (Continued)	12	Hurricane	Punched as X over 2, ≥ 64 knots.	F	
		Blank	Unknown			
20-21	Present Weather	00-19	Abbreviated description of sky and special phenomena		ww	
		00	Cloudless			
		01	Partly cloudy			
		02	Cloudy			
		03	Overcast			
		04	Low fog	Whether on ground or over sea.		
		05	Haze	Visibility ≥ 1100 yards.		
		06	Dust devils seen			
		07	Distant lightning			
		08	Light fog	Visibility between 1100 yards and 2200 yards.		
		09	Fog at a distance	But not at ship.		
		10	Precipitation within sight			
		11	Thunder	Without precipitation at ship.		
		12	Duststorm within sight	But not at ship.		
		13	Ugly, threatening weather			
		14	Squally weather			
		15	Heavy squalls	In last three hours.		
		16	Waterspouts seen			
		17	Visibility reduced by smoke or volcanic ashes	Smoke caused by industrial, grass, or forest fires.		
		18	Duststorm	Visibility > 1100 yards.		
		19	Signs of tropical storm (hurricane)			
		20-29	Precipitation in last hour but not at time of observation			
		20	Precipitation (rain, drizzle, hail, snow or sleet)	In the last hour but not at time of observation.		
		21	Drizzle (other than showers)			
		22	Rain (other than showers)			
		23	Snow (other than showers)			
		24	Rain and snow mixed (other than showers)			
		25	Rain shower(s)			
		26	Snow shower(s)			
		27	Hail or rain and hail shower(s)			
		28	Slight thunderstorm			
		29	Heavy thunderstorm			
		30-39	Duststorms and storms of drifting snow	Visibility < 1100 yards.		
		30	Dust or sand storm			
		31	Dust or sandstorm has decreased			

CARD CONTENT					SOURCE CONTENT	
Col- umns	Item	Code	Code Definition	Remarks	Units or Symbols	Reporting and Coding Practices
20-21	Present Weather (Continued)	32	Dust or sandstorm no appreciable change		ww	
		33	Dust or sandstorm has increased			
		34	Line of duststorms			
		35	Storm of drifting snow			
		36	Slight storm of drift- ing snow	Generally low.		
		37	Heavy storm of drifting snow			
		38	Slight storm of drift- ing snow	Generally high.		
		39	Heavy storm of drifting snow			
		40-49	Fog	Visibility < 1100 yards.		
		40	Fog			
		41	Moderate fog	In last hour but not at the time of observation.		
		42	Thick fog			
		43	Fog, sky discernable	Has become thinner during the last hour.		
		44	Fog, sky not discernable			
		45	Fog, sky discernable	No appreciable change during the last hour.		
		46	Fog, sky not discernable			
		47	Fog, sky discernable	Has begun or become thicker during the last hour.		
		48	Fog, sky not discernable			
		49	Fog in patches			
		50-59	Drizzle	Precipitation consisting of numerous minute drops.		
		50	Drizzle			
		51	Slight drizzle	Intermittent		
		52		Continuous		
		53	Moderate drizzle	Intermittent		
		54		Continuous		
		55	Thick drizzle	Intermittent		
		56		Continuous		
		57	Drizzle and fog			
		58	Drizzle and rain	Slight or moderate.		
		59		Thick		
		60-69	Rain			
		60	Rain			
		61	Slight rain	Intermittent		
		62		Continuous		
		63	Moderate rain	Intermittent		
		64		Continuous		
		65	Heavy rain	Intermittent		
		66		Continuous		
		67	Rain and fog			
		68	Rain snow mixed	Slight or moderate		
		69		Heavy		
		70-79	Snow			
		70	Snow or snow and rain mixed			
		71	Slight snow in flakes	Intermittent		
		72		Continuous		
		73	Moderate snow in flakes	Intermittent		
		74		Continuous		
		75	Heavy snow in flakes	Intermittent		
		76		Continuous		

REFERENCE MANUAL

115 U. S. MERCHANT MARINE 1938-48

CARD CONTENT					SOURCE CONTENT					
Col- umns	Item	Code	Code Definition	Remarks	Units or Symbols	Reporting and Coding Practices				
20-21	Present Weather (Continued)	77	Snow and fog		ww					
		78	Grains of snow	(Frozen drizzle).						
		79	Ice crystals or frozen raindrops	(U.S. definition - sleet)						
		80-89	Shower(s)							
		80	Shower(s)							
		81	Rain shower(s)	Slight or moderate.						
		82		Heavy						
		83	Snow shower(s)	Slight or moderate.						
		84		Heavy.						
		85	Rain and snow shower(s)	Slight or moderate.						
		86		Heavy						
		87	Shower(s) of snow pellets							
		88	Shower(s) of hail or rain and hail	Slight or moderate.						
		89		Heavy						
		90-99	Thunderstorm							
		90	Thunderstorm							
		91	Rain at time of observation	Thunderstorm during the last hour but not at time of observation.						
		92	Snow or snow and rain mixed at time of observation							
		93	Thunderstorm, slight without hail but with rain (or snow)	At time of observation.						
		94	Thunderstorm, slight with hail							
		95	Thunderstorm, moderate without hail but with rain (or snow)							
		96	Thunderstorm, moderate with hail							
		97	Thunderstorm, heavy, without hail, but with rain (or snow)							
		98	Thunderstorm, combined with duststorm							
		99	Thunderstorm, heavy with hail							
			Blank	Unknown						
		22-23	Corrected Barometer Reading	00-44			1000 - 1044 mb	Coded in tens and units of millibars.	PP	
				65-99			965 - 999 mb			
				Blank			Unknown			
		24	Visibility	0			Dense fog	Objects not visible at 50 yards.	V	
1	Thick fog			Objects not visible at 200 yards.						
2	Fog			Objects not visible at 500 yards.						
3	Moderate fog			Objects not visible at 1/2 nautical mile.						
4	Thin fog			Objects not visible at 1 nautical mile.						
5	Poor visibility			Objects not visible at 2 nautical miles.						
6	Moderate visibility			Objects not visible at 5 nautical miles.						
7	Good visibility			Objects not visible at 10 nautical miles.						
8	Very good visibility			Objects not visible at 30 nautical miles.						
9	Excellent visibility			Objects visible at, or more than, 30 nautical miles.						
	Blank			Unknown						

CARD CONTENT					SOURCE CONTENT	
Col- umns	Item	Code	Code Definition	Remarks	Units or Symbols	Reporting and Coding Practices
25-26	Air Temperature	00-99	00° to 99°F or 100° to 199°F	Tens and units of degrees fahrenheit. An X overpunch in column 25 indicates temperatures below 0°F while temperatures above 100°F are punched by dropping the hundreds digit.	$T_f T_f$	
		X X 01-99	-01° to -99°F			
		Blank	Unknown			
27-28	Sea Water Temperature	00-99	00° to 99°F	Tens and units of degrees fahrenheit.	$T_w T_w$	
		Blank	Unknown			
29-30	Wet Bulb Temperature	00-99	00° to 99°F	Tens and units of degrees fahrenheit.	$T_b T_b$	
		X X 01-99	-01° to -99°F			
		Blank	Unknown			
31	State of the Sea	0	Calm	Height of wave, crest to trough: 0 feet.	S	
		1	Smooth	Less than 1 foot.		
		2	Slight	1 to 3 feet.		
		3	Moderate	3 to 5 feet.		
		4	Rough	5 to 8 feet.		
		5	Very rough	8 to 12 feet.		
		6	High	12 to 20 feet.		
		7	Very high	20 to 40 feet.		
		8	Precipitous	Over 40 feet.		
		9	Confused			
32	Form of Low Cloud	Blank	Unknown		C_L	
		0	No lower clouds			
		1	Cumulus of fine weather			
		2	Cumulus, heavy and swelling, without anvil top			
		3	Cumulonimbus			
		4	Stratocumulus formed by the flattening of cumulus clouds			
		5	Layer of stratus or stratocumulus			
		6	Low broken up clouds of bad weather			
		7	Cumulus of fine weather and stratocumulus			
		8	Heavy or swelling cumulus or cumulonimbus, and stratocumulus			
33	Form of Middle Cloud	9	Heavy or swelling cumulus (or cumulo- nimbus) and low ragged clouds of bad weather		C_M	
		Blank	Unknown			
		0	No middle clouds			
		1	Typical Altostratus, thin			
		2	Typical altostratus, thick (or nimbostratus)			
		3	Alto cumulus or high stratocumulus, sheet at one level only			

CARD CONTENT					SOURCE CONTENT	
Col- umns	item	Code	Code Definition	Remarks	Units or Symbols	Reporting and Coding Practices
33	Form of Middle Cloud (Continued)	4	Alto cumulus in small isolated patches; individual clouds often show signs of evaporation and are more or less lenticular in shape		C _M	
		5	Alto cumulus arranged in more or less parallel bands, or an ordered layer advancing over the sky			
		6	Alto cumulus formed by spreading out of the tops of cumulus			
		7	Alto cumulus associated with altostratus or altostratus with a partially alto cumulus character			
		8	Alto cumulus castellatus or scattered cumuli-form tufts			
		9	Alto cumulus in several sheets at different levels, generally associated with thick fibrous veils of clouds and a chaotic appearance of the sky			
		Blank	Unknown			
34	Form of High Cloud	0	No high clouds		C _H	
		1	Cirrus, delicate, not increasing, scattered and isolated masses			
		2	Cirrus, delicate, not increasing, abundant but not forming a continuous layer			
		3	Cirrus or anvil clouds, usually dense			
		4	Cirrus, increasing, generally in the form of hooks, ending in a point or in a small tuft			
		5	Cirrus (often in polar bands) or cirrostratus advancing over the sky but not more than 45° above the horizon			
		6	Cirrus (often in polar bands) advancing over the sky and more than 45° above the horizon			

CARD CONTENT					SOURCE CONTENT	
Col- umns	Item	Code	Code Definition	Remarks	Units or Symbols	Reporting and Coding Practices
34	Form of High Cloud (Continued)	7	Veil of cirrostratus covering the whole sky		C _H	
		8	Cirrostratus not increasing and not covering the whole sky			
		9	Cirrocumulus predominating, associated with a small quantity of cirrus			
		Blank	Unknown			
35	Total Amount of all Clouds	0	No clouds		N	
		1	Less than 1/10			
		2	1/10			
		3	2/10 to 3/10			
		4	4/10 to 6/10			
		5	7/10 to 8/10			
		6	9/10			
		7	More than 9/10 but with openings			
		8	10/10 sky completely covered with clouds			
		9	Sky obscured by fog, duststorm, or other phenomenon			
		Blank	Unknown			
36	Temperature Difference (Air and Water)	0	> 9°F	Air temoerate same as or higher than sea temperature.	T _d	
		1	6° - 9°F			
		2	3° - 6°F			
		3	1° - 3°F			
		4	No difference or < 1°F			
		5	Less than 1°F	Air temperature lower than sea temperature.		
		6	1° - 3°F			
		7	3° - 6°F			
		8	6° - 9°F			
		9	More than 9°F			
		Blank	Unknown			
37	Character of Swell	0	No swell		K	
		1	Low swell	Short or average length		
		2		Long		
		3	Moderate swell	Short		
		4		Average length		
		5		Long		
		6	Heavy swell	Short		
		7		Average length		
		8		Long		
		9	Confused swell			
		Blank	Unknown			
38	Direction of Swell	0	No sea or swell		D _K	
		1	From Northeast			
		2	From East			
		3	From Southeast			
		4	From South			
		5	From Southwest			
		6	From West			
		7	From Northwest			
		8	From North			

CARD CONTENT					SOURCE CONTENT	
Col- umns	Item	Code	Code Definition	Remarks	Units or Symbols	Reporting and Coding Practices
38	Direction of Swell (Continued)	9	All directions or no definite direction		D _k	
		Blank	Unknown			
39	Past Weather	0	Fair	Clear or slightly clouded	W	
		1	Variable sky			
		2	Mainly overcast			
		3	Sandstorm or duststorm or storm of drifting snow			
		4	Fog or thick dust haze	Visibility less than 1100 yards.		
		5	Drizzle			
		6	Rain			
		7	Snow or sleet			
		8	Showers			
		9	Thunderstorm			
		Blank	Unknown			
40	Amount of Low Cloud	0	No clouds		N _h	
		1	Less than 1/10			
		2	1/10			
		3	2/10 to 3/10			
		4	4/10 to 6/10			
		5	7/10 to 8/10			
		6	9/10			
		7	More than 9/10 but with openings			
		8	10/10 sky completely covered with clouds			
		9	Sky obscured by fog, duststorm, or other phenomenon			
		Blank	Unknown			
41	Direction of Ship	0	Ship hove to		d _s	Direction in which ship is moving.
		1	Northeast			
		2	East			
		3	Southeast			
		4	South			
		5	Southwest			
		6	West			
		7	Northwest			
		8	North			
		9	All directions or no definite direction			
		Blank	Unknown			
42	Speed of Ship	0	Ship stopped		V _s	
		1	1 - 3 knots			
		2	4 - 6 knots			
		3	7 - 9 knots			
		4	10 - 12 knots			
		5	13 - 15 knots			
		6	16 - 18 knots			
		7	19 - 21 knots			
		8	22 - 24 knots			
		9	Over 24 knots			
		Blank	Unknown			

CARD CONTENT					SOURCE CONTENT	
Col- umns	Item	Code	Code Definition	Remarks	Units or Symbols	Reporting and Coding Practices
43	Characteristic of Pressure Change	0	Rising, then falling	Barometer now higher than or the same as 3 hours ago.	a	
		1	Rising, then steady; or rising, then rising more slowly			
		2	Unsteady			
		3	Steady or rising			
		4	Falling or steady, then rising; or rising, then rising more quickly			
		5	Falling then rising	Barometer now lower than 3 hours ago.		
		6	Falling, then steady; or falling then falling more slowly			
		7	Unsteady			
		8	Falling			
		9	Steady or rising, then falling; or falling, then falling more quickly			
44-45	Barometer Change	Blank	Unknown			
		00-99	0 mb to 19.8 mb change	Amount of rise or fall during the 3 hours preceding the observation in fifths of millibars.	pp	Reported and punched in fifths of millibars.
		X X 00-99	20.0 mb to 39.8 mb change	An X overpunch in column 45 indicates that 20.0 mb. is to be added to the actual amount of change punched.		
Blank	Unknown					
46	F > 9		Omitted	Beaufort forces greater than 9 are shown in column 19.		
47-50	Ship's Barometer Number	1000- 9999	Ship's barometer number was punched when avail- able	Of no meteorological advantage but only of use in transcribing data from form 1210A to punched cards.		
		Blank	Unknown			
51	Barometer Comparison Center Number	1	New York	For reference only. The number of the station which issued the ship's barometer number.		
		2	New Orleans			
		3	San Francisco			
		Blank	Unknown			
52-80	Blank	Not used				